

California Milk Pricing Formulas

Introduction to California Milk Pricing

California's milk marketing program establishes minimum prices that processors must pay for Grade A milk received from dairy farmers. For the purposes of setting prices, there are five classes of milk that are established depending on the type of dairy product. In California's milk pricing system, commercial market prices for dairy product commodities are a significant factor in determining the minimum price that processors must pay for milk.

Milk consists of three basic components: butterfat (fat), solids–not–fat (SNF) and fluid carrier (water). Prices are assigned to all three components in the determination of the Class 1 milk price. Only the fat and SNF components are used to set the Class 2, 3, 4a and 4b milk prices. Because prices are determined for individual milk components, a simple calculation must be performed to obtain the implied hundredweight price. Class 2 and 3 prices are adjusted bimonthly, and Class 1, 4a and 4b prices are adjusted monthly.

The Five Classes of Milk

Class 1: Milk used in fluid products, including whole, lowfat, extra light and nonfat milks.

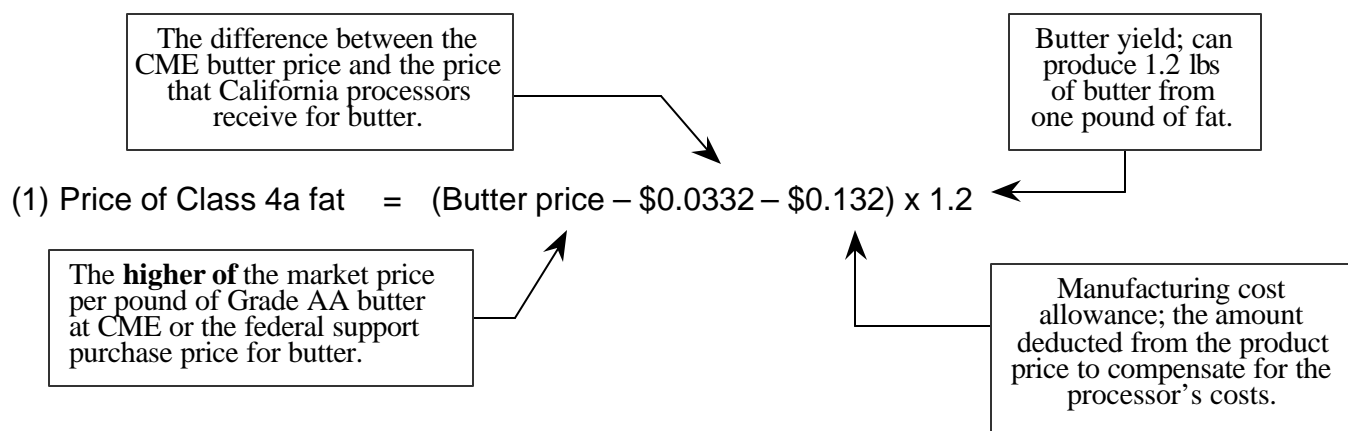
Class 2: Milk used in heavy cream, cottage cheese, yogurt and condensed products.

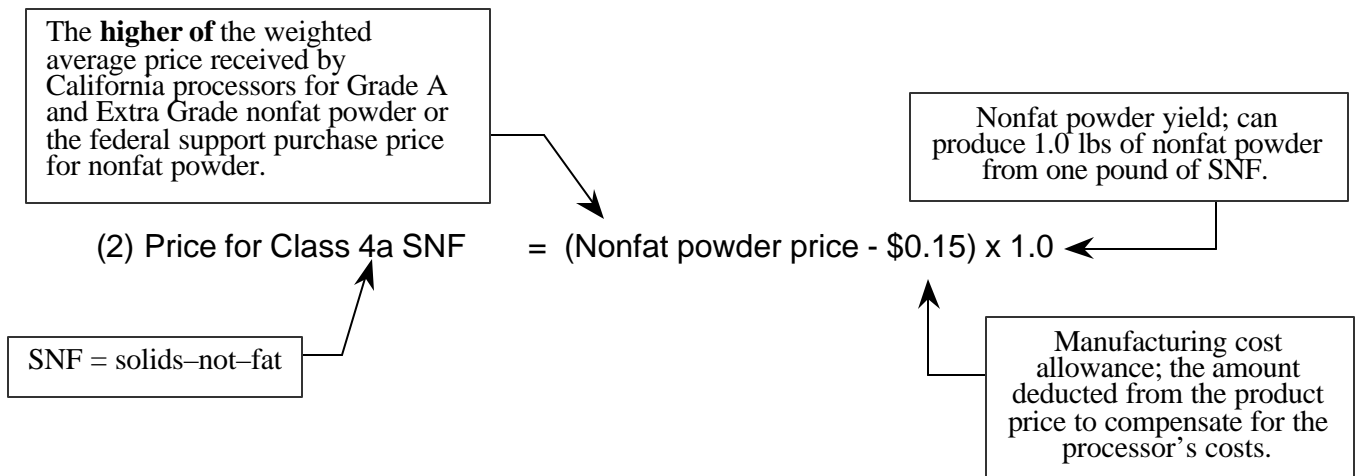
Class 3: Milk used in ice cream and other frozen products.

Class 4a: Milk used in butter and dry milk products, such as nonfat dry milk.

Class 4b: Milk used in cheese, other than cottage cheese.

Class 4a price formula (butter and dry milk products)





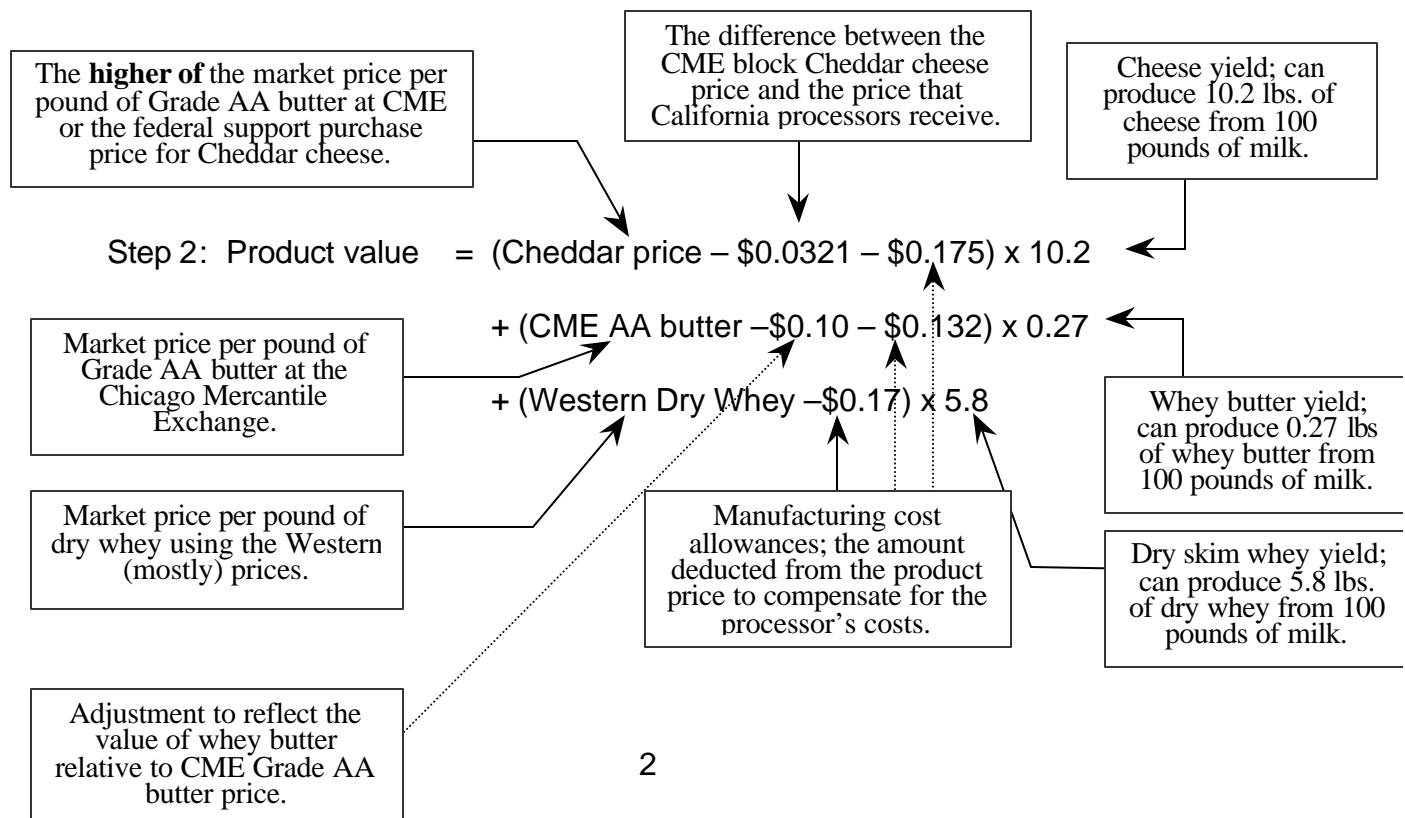
(3) Class 4a price per 100 pounds of standardized milk (@3.5% fat & 8.7% SNF)

$$= (3.5 \times \text{price of Class 4a fat}) + (8.7 \times \text{price of Class 4a SNF})$$

Class 4b price formula (cheese)

The Class 4b price calculation consists of four steps. The first step sets the fat component price in 4b milk to that of 4a milk. The second step determines the value of cheese and Grade B butter per hundred pounds of milk. The third step identifies the 4b SNF price. The fourth step converts the component prices to a standardized milk price.

Step 1: Price of Class 4a fat = Price of Class 4b fat



Step 3: Price of Class 4b SNF =

$$\frac{\text{Product value} - (3.72 \times \text{Price of Class 4b fat})}{8.80}$$

Average percent of fat
in raw milk used in
Cheddar cheese plants

Average percent of
solids-not-fat in raw
milk used in Cheddar
cheese plants

Step 4: Class 4b price per 100 pounds of standardized milk (@3.5% fat & 8.7% SNF)

$$= (3.5 \times \text{price of Class 4b fat}) + (8.7 \times \text{price of Class 4b SNF})$$

Class 3 price formula (frozen dairy products)

Class 3 prices are established on a bi-monthly basis prior to the beginning of each even month. For example, the February–March pricing period for Class 3 milk uses the average Class 4a component prices for December and January.

(1) Class 3 fat price = average Class 4a fat price +

$\left(\begin{array}{c} \$0.0370 \text{ in Northern California} \\ \text{OR} \\ \$0.0393 \text{ in Southern California} \end{array} \right)$

The average Class
4a price for two
consecutive months

Differentials depend on
processor location

(2) Class 3 SNF price = average Class 4a SNF price + (\$0.0586 throughout California)

(3) Class 3 price per 100 pounds of standardized milk (@3.5% fat and 8.7% SNF)

$$= (3.5 \times \text{price of Class 3 fat}) + (8.7 \times \text{price of Class 3 SNF})$$

Class 2 price formula (sour cream, heavy cream, cottage cheese, and yogurt)

Like the Class 3 prices, Class 2 prices are established on a bi-monthly basis prior to the beginning of each even month. For example, the February–March period pricing period for Class 2 milk uses the average Class 4a component prices for December and January.

$$\begin{aligned}
 (1) \text{ Class 2 fat price} &= \text{Average Class 4a fat price} + \left(\begin{array}{c} \$0.0370 \text{ in Northern California} \\ \text{OR} \\ \$0.0393 \text{ in Southern California} \end{array} \right) \\
 (2) \text{ Class 2 SNF price} &= \text{Average Class 4a SNF price} + \left(\begin{array}{c} \$0.0643 \text{ in Northern California} \\ \text{OR} \\ \$0.0901 \text{ in Southern California} \end{array} \right) \\
 (3) \text{ Class 2 price per 100 pounds of standardized milk (@3.5\% fat and 8.7\% SNF)} \\
 &= (3.5 \times \text{price of Class 2 fat}) + (8.7 \times \text{price of Class 2 SNF})
 \end{aligned}$$

Differentials depend on milk component and processor location

Class 1 price formula for fluid milk products

Determining the price for fluid milk products involves several steps. The Class 1 fat price for fluid milk pricing formula is set directly and uses the Chicago Mercantile Exchange (CME) butter price with an adjustment. The SNF and carrier prices are calculated as residuals. They rely on a basic price mover called the commodity reference price (CRP) which is based off the higher of the CME price for Cheddar cheese or the CME Grade AA butter and California weighted average price for nonfat dry milk. The Class 1 fat price is subtracted from the CRP and the remaining residual value is allocated to SNF and carrier. Once the component prices have been assigned to fat, SNF, and fluid carrier portions of milk, the implied value of raw milk can be calculated.

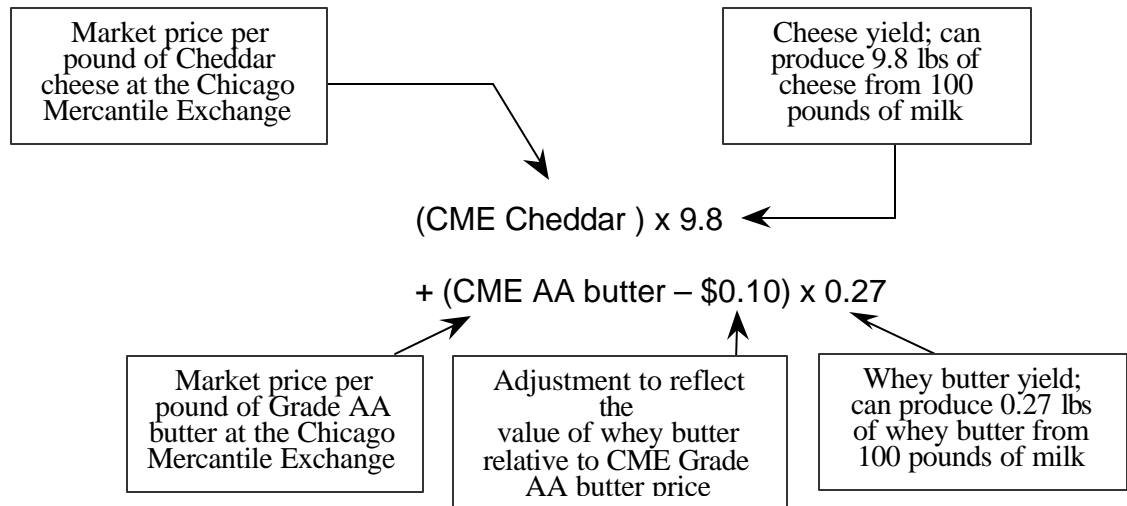
$$\text{Step 1: Price of Class 1 fat} = (\text{CME butter} - \$0.10) \times 1.2$$

Butter adjuster

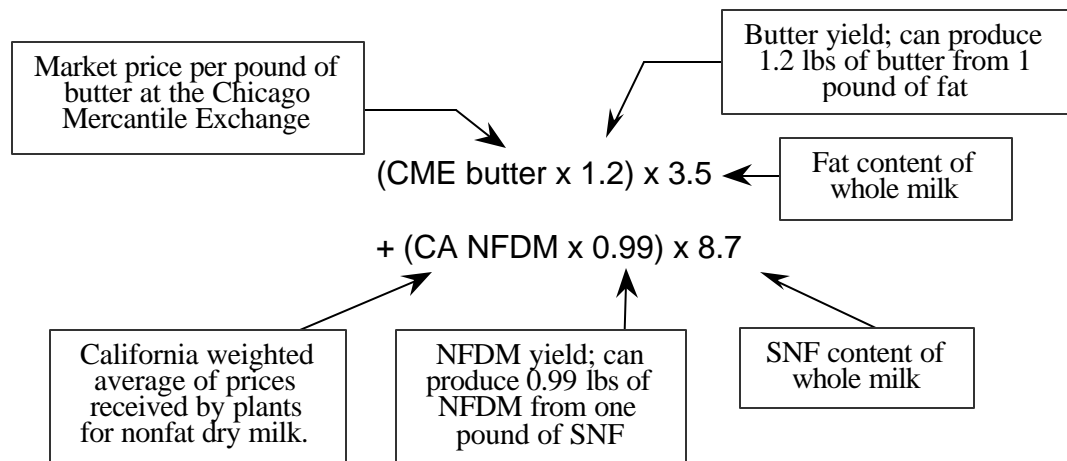
Market price per pound of Grade AA butter at the Chicago Mercantile Exchange

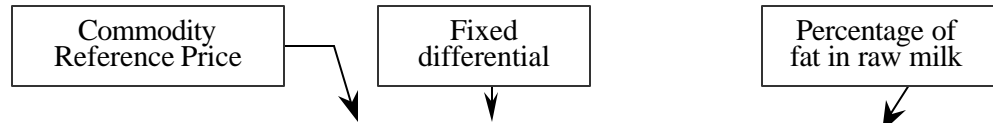
Butter yield; can produce 1.2 lbs of butter from one pound of fat

Step 2: Commodity Reference Price = the **higher of** two price calculations:

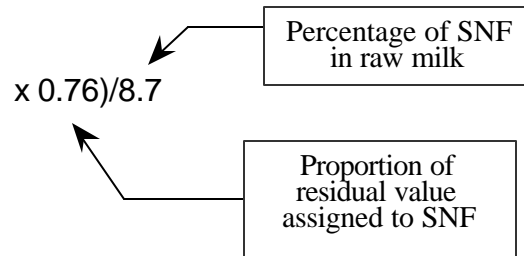


OR

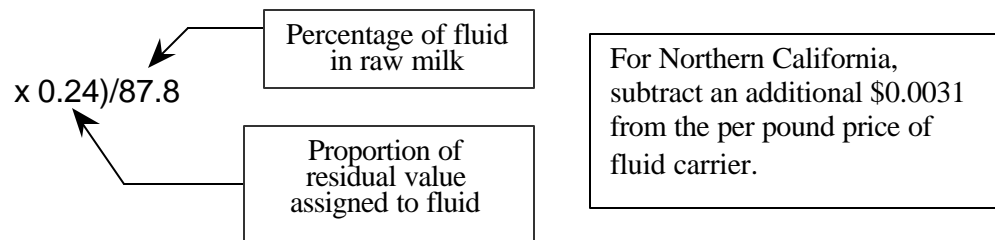




Step 3: Price of Class 1 SNF = (((CRP + \$0.464) – (Class 1 fat price x 3.5))



Step 4: Price of Class 1 fluid = (((CRP + \$0.464) – (Class 1 fat price x 3.5))



Step 5: Class 1 price per 100 pounds of milk (@3.5% fat and 8.7% SNF)

$$= (3.5 \times \text{Class 1 fat}) + (8.7 \times \text{Class 1 SNF}) + (87.8 \times \text{Class 1 carrier})$$